

CLAIMS

What is claimed is:

1 1. An isolated polypeptide comprising a sequence selected from one of:

2 (a) SEQ ID NOS:1-23;

3 (b) SEQ ID NOS:26-31;

4 (c) SEQ ID NOS:1-23 having one or more conservative amino acid

5 substitutions; or

6 (d) SEQ ID NOS:26-31 having one or more conservative amino acid

7 substitutions.

1 2. The isolated polypeptide of claim 1 wherein the sequence is selected from

2 one of (A) or (B).

1 3. The isolated polypeptide of claim 1 wherein the sequence is selected from

2 SEQ ID NO:1 or SEQ ID NO:9.

1 4. The isolated polypeptide of claim 1 wherein the sequence is selected from

2 SEQ ID NO:2 or SEQ ID NO:10.

1 5. The isolated polypeptide of claim 1 wherein the sequence is selected from

2 SEQ ID NO:3 or SEQ ID NO:7.

1 6. The isolated polypeptide of claim 1 wherein the sequence is selected from

2 SEQ ID NO:8.

1 7. The isolated polypeptide of claim 1 wherein the sequence is selected from

2 SEQ ID NO:4 or SEQ ID NO:13.

1 8. The isolated polypeptide of claim 1 wherein the sequence is selected from
2 SEQ ID NO:5 or SEQ ID NO:17.

1 9. The isolated polypeptide of claim 1 wherein the sequence is selected from
2 SEQ ID NO:6 or SEQ ID NO:18.

1 10. The isolated polypeptide of claim 1 wherein the sequence is selected from
2 SEQ ID NO:12 or SEQ ID NO:21.

1 11. The isolated polypeptide of claim 1 wherein the sequence is selected from
2 SEQ ID NO:11 or SEQ ID NO:15.

1 12. The isolated polypeptide of claim 1 wherein the sequence is selected from
2 SEQ ID NO:14 or SEQ ID NO:16.

1 13. The isolated polypeptide of claim 1 wherein the sequence is selected from
2 SEQ ID NO:19 or SEQ ID NO:20.

1 14. The isolated polypeptide of claim 1 wherein the sequence is selected from
2 SEQ ID NO:22 or SEQ ID NO:23.

1 15. The isolated polypeptide of claim 1 wherein the sequence is selected from
2 SEQ ID NO:26 or SEQ ID NO:27.

1 16. The isolated polypeptide of claim 1 wherein the sequence is selected from
2 SEQ ID NO:28 or SEQ ID NO:29.

1 17. The isolated polypeptide of claim 1 wherein the sequence is selected from
2 SEQ ID NO:30 or SEQ ID NO:31.

1 18. The isolated polypeptide of claim 2 wherein the polypeptide comprises
2 part of a carrier protein.

1 19. The isolated polypeptide of claim 2 further comprising an accessory
2 molecule.

1 20. The isolated polypeptide of claim 19 wherein the accessory molecule is a
2 tag molecule, identification molecule, chemotherapeutic agent, radiopharmaceutical, cytotoxic
3 agent, treatment molecule, antigenic molecule, antibody fragment or antibody.

1 21. The isolated polypeptide of claim 1 wherein the polypeptide consists
2 essentially of a sequence selected from (A), (B), (C) or (D).

1 22. A method for binding a peptide to a cell, comprising:
2 contacting a polypeptide comprising a sequence selected from one of:
3 (a) SEQ ID NOS:1-23;
4 (b) SEQ ID NOS:26-31;
5 (c) SEQ ID NOS:1-23 having one or more conservative amino acid
6 substitutions; or
7 (d) SEQ ID NOS:26-31 having one or more conservative amino acid
8 substitutions,

9 with one or more cells for a period of time sufficient to produce one or more
10 polypeptide-bound cells.

1 23. The method of claim 22 wherein the polypeptide comprises a sequence
2 selected from (a) or (b).

1 24. The method of claim 22 further comprising separating any polypeptide-
2 bound cells.

1 25. The method of claim 22 wherein the one or more cells are leukemia cells.

1 26. The method of claim 23 wherein the polypeptide is attached to a solid
2 support or a viral envelope.

1 27. The method of claim 23 further comprising measuring the number of
2 polypeptide-bound cells.

1 28. The method of claim 22 wherein the polypeptide comprises part of a
2 carrier protein.

1 29. The method of claim 22 wherein the polypeptide comprises an accessory
2 molecule.

1 30. The method of claim 22 wherein the accessory molecule is a tag molecule,
2 detection molecule, chemotherapeutic agent, radiopharmaceutical, cytotoxic agent, treatment
3 molecule, antigenic molecule, antibody fragment or antibody.

1 31. The method of claim 22 wherein the polypeptide consists essentially of a
sequence selected from one of (a), (b), (c) or (d).

1 32. A kit for binding polypeptides to cells comprising instructions for carrying
out the method of claim 22.

1 33. The kit of claim 32 further comprising one or more polypeptides
comprising a sequence selected from one of:

- 2 (a) SEQ ID NOS:1-23;
- 3 (b) SEQ ID NOS:26-31;
- 4 (c) SEQ ID NOS:1-23 having one or more conservative amino acid
5 substitutions; or
- 6 (d) SEQ ID NOS:26-31 having one or more conservative amino acid
7 substitutions.

1 34. A method of inducing an acute myelogenous leukemia cell differentiation
2 into a mature hematopoietic cell comprising:

- 3 (a) contacting an acute myelogenous leukemia cell with a peptide that
4 preferentially binds to the acute myelogenous leukemia cell to produce a peptide-bound acute
5 myelogenous leukemia cell; and
- 6 (b) inducing differentiation of the peptide-bound acute myelogenous leukemia
7 cell into a mature blood cell that performs normal blood cell function.

1 35. The method of claim 34 wherein the peptide induces differentiation of the
2 peptide-bound acute myelogenous leukemia cell into the mature blood cell.

1 36. The method of claim 34 wherein the peptide is bound to a treatment
2 molecule which induces differentiation of the peptide-bound acute myelogenous leukemia cell
3 into the mature blood cell.

1 37. The method of claim 34 wherein steps (a) and (b) are performed *in vivo*.

1 38. The method of claim 37 further comprising contacting one or more
2 additional acute myelogenous leukemia cells with a chemotherapeutic agent.

1 39. An isolated peptide comprising a binding region which binds
preferentially to a surface of a blood cell with the proviso that the peptide does not bind to an
3 immunogenic molecule on the surface of the blood cell.

40. The isolated peptide of claim 39 wherein the blood cell is a leukemia cell.

41. The isolated polypeptide of claim 39 wherein the polypeptide comprises
part of a carrier protein.

1 42. The isolated polypeptide of claim 39 further comprising an accessory
2 molecule.

1 43. The isolated polypeptide of claim 39 wherein the accessory molecule is a
tag molecule, identification molecule, chemotherapeutic agent, radiopharmaceutical, cytotoxic
3 agent, treatment molecule, antigenic molecule, antibody fragment or antibody.

1 44. The isolated polypeptide of claim 40 wherein the polypeptide induces
2 differentiation of the leukemia cell into a mature blood cell capable of normal blood cell
3 function.

1 45. The isolated polypeptide of claim 40 wherein the polypeptide inhibits
2 proliferation of the leukemia cell.

1 46. A method for specifically binding a peptide with a cellular component
2 comprising contacting a portion of a cell membrane of a hematopoietic cell with a peptide that
3 preferentially binds to a component of the cell membrane of the hematopoietic cell for a
4 sufficient period of time to allow the peptide to bind to the component of the cell membrane,
5 wherein the component of the cell membrane that is preferentially bound by the peptide is
6 weakly immunogenic or not immunogenic.

1 47. The method of claim 46 further comprising separating the portion of the
2 hematopoietic cell membrane bound to the peptide.

1 48. The method of claim 46 wherein the peptide is bound to an accessory
2 molecule or a solid support.

1 49. The method of claim 48 wherein the accessory molecule is a tag molecule,
2 identification molecule, chemotherapeutic agent, radiopharmaceutical, cytotoxic agent, treatment
3 molecule, antigenic molecule, antibody fragment or antibody.

1 50. The method of claim 47 wherein the hematopoietic cell is a leukemia or a
2 preleukemia cell.

1 51. The method of claim 47 further comprising identifying the portion of the
2 hematopoietic cell membrane bound to the peptide.